IN THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1(original): ~~"A PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES" characterized by the fact that it comprises the following sequence of unit operations:~~ A process to obtain titanium concentrates with high contents of TiO_2 and low contents of radionuclide elements from anatase mechanical concentrates, said process comprising the steps of:

calcinating ore ~~calcination~~ in a fluidized bed or rotary kiln~~,~~ in ~~the~~ a temperature range of 400°C to 550°C~~, during~~ for 30 minutes to one hour, converting hydrated iron oxides into hematite and ~~promoting less needed~~ reducing time necessary for ~~the~~ a next reduction step, to form a calcinated product;

~~magnetizing~~ conducting reduction of the calcinated product in the fluidized bed or rotary kiln~~,~~ at 400°C to 550°C~~, during~~ for 5 to 30 minutes, using hydrogen,

carbon monoxide, natural gas or any other reducing gas~~, in order~~ to convert hematite into magnetite, to form a reduced product;

conducting low-intensity magnetic separation of the reduced product~~,~~ in drum separators~~,~~ in a 600 to 800 Gauss magnetic field, thereby extracting the magnetic fraction formed in the reduction stage, to form a low-intensity non-magnetic fraction;

conducting a dry, high-intensity magnetic separation of the low-intensity non-magnetic fraction~~,~~ in a drum or roll ~~separators~~ separator and a rare-earth permanent magnet~~,~~ in a 16000 to 20000 Gauss magnetic field, thereby extracting the magnetic fraction from silicates, secondary phosphates, monazite, calzirtite, zirconolite and uranium and thorium bearing minerals, to form a high-intensity magnetic fraction;

conducting hydrochloric acid leaching of the high-intensity magnetic fraction, in agitation or column tanks, with 20 to 30% w/w HCl, ~~with~~ in a 1/2 w/w solid-liquid ratio~~,~~ at a temperature between 90°C and 107°C~~,~~ for 2 to 4 hours, thereby solubilizing primary phosphates, iron oxides, aluminium, magnesium, barium and calcium, to form a leached product;

conducting filtration of the leached product~~,~~ in a belt filter, to form a first filtrated product;

drying of the first filtrated product in a rotary or fluidized-bed drier, to form a first dried product;

~~oxidation~~ oxidizing of the first dried ore in a rotary kiln or fluidized bed reactor, under a flow of air or oxygen~~,~~ at a temperature range of 1000°C to 1100°C~~,~~ in ~~the~~ a presence of a mixture of sodium fluoride (NaF) and amorphous silica (SiO_2), in a 3% to 10% NaF and 1% to 10% SiO_2 proportion with respect to ~~the~~ an amount of material fed to oxidation, thereby forming in ~~the~~ a boundary of anatase grains a radionuclide-rich vitreous phase~~,~~ in addition to promoting radionuclide migration to ~~the~~ an iron-rich phase, to form an oxidation product;

quenching ~~in water of~~ the oxidation product in water, thereby respectively stabilizing the vitreous and the iron-rich phases, to form a first quenched product;

conducting hydrochloric acid ~~leach~~ leaching of the first quenched product in agitation or column tanks~~,~~ with 20 to 30% w/w HCl~~, with~~ in a 1/2 w/w solid-liquid ratio~~,~~ at a 90°C to 107°C temperature range~~, during~~ for 2 to 4 hours, in ~~the~~ a presence of sodium fluoride (NaF) or hydrofluoric acid (HF), thereby solubilizing ~~the~~ a radionuclide-rich vitreous phase through ~~the~~ action of generated or added ~~ion~~ fluoride ~~action~~ ion (F^-) action, to form a second leached product;

filtering of the second ~~leaching~~ leached product in a belt filter, to form a second filtrated product;

drying of the second filtrated product in a rotary or fluidized bed drier, to form a second dried product;

conducting dry, high-intensity magnetic separation ~~(~~of the second dried product in a 16000 to 20000 Gauss~~)~~ magnetic field in a drum or roll separator and rare-earth permanent magnet, thereby separating ~~the~~ an iron containing, radionuclide rich fraction, the non-magnetic fraction becoming the end product concentrate and the magnetic fraction being discarded.

Claim 2 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF~~ ~~TiO_2~~ ~~AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that~~ wherein the reduction step is carried out ~~with hydrogen, carbon monoxide, natural gas or any other reducing gas in temperature range of 400°C to 550°C, preferably~~ at 500°C~~, during 5 to 30 minutes, preferably~~ for 5 minutes.

Claim 3 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF~~ ~~TiO_2~~ ~~AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL~~

~~CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that~~ wherein the separation of impurities rich in iron, silicates, secondary phosphates, monazite, calzirtite, zirconolite and uranium and thorium containing minerals after the reduction ~~takes place~~ step is carried out through ~~the~~ sequential use of operations of low intensity and high intensity magnetic separations.

Claim 4 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 3, ~~characterized by the fact that the step of~~ wherein the magnetic field used in the dry, high intensity magnetic separation step forming the high-intensity magnetic fraction is ~~done in~~ a ~~rare-earth roll or permanent magnet separator, with magnetic field intensity ranging from 16000 to 20000 Gauss, preferably~~ 20000 Gauss magnetic field.

Claim 5 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that~~

wherein the first hydrochloric acid leaching ~~operation after low intensity and high intensity magnetic separations takes place with~~ step is carried out using a solution containing 20% to ~~30% w/w HCl, preferably~~ 25%~~, during 2 to~~ ~~4 hours, preferably~~ for 4~~,~~ hours at a temperature ~~between 90°C and 107°C, preferably~~ of 105°C~~, without the addition of air or any other oxidizing agent during leaching~~.

Claim 6 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that~~ wherein the oxidation step ~~of the product resulting from the first HCl leaching~~ is carried out in a rotary horizontal kiln or in a fluidized bed~~, at a temperature between 1000°C and 1100°C, in the presence of a mixture of sodium fluoride (NaF) and amorphous silica (SiO_2), with an amount of 3% to 10% NaF, preferably~~ with 6% to 7% NaF and ~~1%~~ 3% to ~~10%~~ 4% SiO_2~~, preferably from 3% to 4% SiO_2, both~~ with respect to ~~the~~ an amount of ~~ore~~ anatase mechanical concentrates fed into oxidation, under continuous air or oxygen injection, ~~with~~ for a duration of 30 to 120 minutes~~, preferably 60 minutes~~.

Claim 7 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 6, ~~characterized by the fact that~~ wherein the fluoride containing compound used in the oxidation step includes one ~~of~~ or more of the following substances: lithium fluoride (LiF), sodium fluoride (NaF), potassium fluoride (KF), magnesium fluoride (MgF_2), calcium fluoride (CaF_2) or ammonium fluoride (NH_4F).

Claim 8 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that~~ wherein the material resulting from the oxidation step is quenched in water, air or any other cooling means.

Claim 9 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL~~

~~CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that~~ wherein the second hydrochloric acid leaching ~~of the product of oxidation and thermal shock~~ step is carried out with a solution containing ~~from 20% to 30%~~ 25% w/w HCl~~, preferably 25%, during 2 to~~ for 4 hours~~, preferably 4,~~ at a temperature ~~between 90°C and 107°C, preferably~~ of 105°C and in the presence of sodium fluoride or hydrofluoric acid, with an amount ~~of~~ ranging from 10 g to 30 g of fluoride ion (F^-) per liter of leaching solution~~, preferably 20 g of F^- per liter~~.

Claim 10 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 9, ~~characterized by the fact that~~ wherein the fluoride containing compound used in the second HCl leaching includes one or more of the following substances: lithium fluoride (LiF), sodium fluoride (NaF), potassium fluoride (KF), magnesium fluoride (MgF_2), calcium fluoride (CaF_2) or ammonium fluoride (NH_4F) or hydrofluoric acid (HF).

Claim 11 (Currently Amended): The ~~PROCESS TO OBTAIN TITANIUM CONCENTRATES WITH HIGH CONTENTS OF TiO_2 AND LOW CONTENTS~~

~~OF RADIONUCLIDE ELEMENTS FROM ANATASE MECHANICAL CONCENTRATES~~ process according to claim 1, ~~characterized by the fact that the product resulting from the second hydrochloric acid leaching undergoes magnetic separation through a rare-earth permanent magnet, either roll or drum, with~~ wherein the magnetic field ~~intensity ranging from 16000 to 20000 Gauss, preferably~~ used in the dry, high-intensity magnetic separation step of the second dried product is a 20000 Gauss~~, the non-magnetic fraction resulting from this separation becoming the final concentrate~~ magnetic field.